淡江大學九十學年度日間部轉學生招生考試試題

系別：資訊工程學系三年級

科目：程 式 語 言

准帶項目請打「○」否則打「×」

計算機	字典
×	✓

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本試題雙面印製

1. Rewrite the following conditionals as sequential choices so that no **if** statement is nested within **then** part of another **if**. Use the **else if** form instead. You may change the boolean expressions by an equivalent one and use **null** (empty) statements as you wish. (10%)

```
if  $n \ge 60$  then
    if  $n < 80$  then
        if  $n \ge 70$   then
            seventy(n)
        else
            sixty(n)
        endif
    else
        eighty(n)
    endif
else
    twenty(n)
endif
```

2. Write the output of the following C program. (10%)

```
#include  <stdio.h>
main() {
    char  c1 = 100;
    char  c2 = 200;
    char  c3 = c1 + c2;
    printf("c2 = %d\n",c2);
    printf("c3 = %d\n",c3);
}
```

3. Suppose that precedence of dereferencing operator * is higher than precedence of post- and pre-increment operator ++ in C. Given the following sequence of C statements,

```
char str[] = "examination";
char *p = str;
printf("%c\n",*p++ );
printf("%c\n",*(p++) );
printf("%c\n",(*p)++ );
printf("%c\n",*++p );
printf("%c\n",*(++p) );
printf("%c\n",++*p );
printf("%c\n",++(*p) );
```

(a) write the output after executing it in sequence, and (21%)

(b) give the final value of array **str**. (4%)

◀注意背面尚有試題▶

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本試題共 2 頁 P2

4. About programming language Java

(a) What is the difference between *instance* variables and *class* variables in Java? (5%)

(b) Give the counter-part of Java's *class* variables in C++. (5%)

5. Consider function call **comb(5,3)** of the following C function

```
int comb(int n, int m) {
   if( n==m  ||  m==0 )
      return 1;
   return( comb( n-1, m) + comb(n-1,m-1) )
}
```

(a) Compute the return value of the call. (10%)

(b) Totally how many calls of function **comb** to have the answer in part (a)? (5%)

(c) What would happen for the call **comb(2,3)** ? (5%)

(d) Rewrite the function to avoid the problem caused in part (c) . (5%)

6. Assume that a short integer needs 2 bytes, an integer needs four bytes, a long integer needs eight bytes, and a character needs one byte in C. Consider the following piece of declarations in C

```
struct aa { long a1;
            char  a2[3];
            short  a3;     };
struct ss { int  a1;
               char  a2[10];
            struct aa  a3[2];
            char  a4[3];  };
struct ss  sp[100];
```

Furthermore, consider the boundary conditions: (i) a short integer has to begin at an even address, (ii) an integer has to begin at an address divisible by four, (iii) a long integer has to begin at an address divisible by eight, and (iv) a "char" can be anywhere. Answer the following questions and show each step in detail.

(a) Compute the result of expression **sizeof(struct ss)** (10%)

(b) Suppose the starting address of **sp** is at 3600. Compute the beginning addresses (in bytes) of expression **sp[18].a3[1].a2[1]** (10%)